

**XXXIV – ROCHESTER SYMPOSIUM FOR PHYSICS (ASTRONOMY AND
OPTICS) STUDENTS
SPS ZONE 2 REGIONAL MEETING**

PROGRAM

8:00 AM – 8:30 AM: REGISTRATION AND POSTER SETUP (NUCLEUS)

8:30 AM: WELCOME (ROOM 122)

Prof. Frank Wolfs, University of Rochester
Dean Adrienne McCormick, SUNY Oswego
Prof. Dale Zych, SUNY Oswego

9.00 AM – 10:00 AM: SESSION IA. ASTRONOMY I (ROOM 122)

SESSION CHAIR: PROF. GEORGE HASSEL, SIENA COLLEGE

**9:00 AM, Morphology of the Large Magellanic Cloud Using Classical
Cepheids**

Daniel Wysocki, Shashi Kanbur, Sukanta Deb, and Harinder P. Singh, SUNY
Oswego, University of Delhi

**9:15 AM, Conditional Entropy Methods for Period Detection in Variable
Stars**

Vincent DeBiase, Gabriel Lauffer Ramos, SUNY Oswego

9:30 AM, Fourier Analysis of CSTAR RR Lyrae Variable Stars

Kenneth Roffo, Michael Leone, SUNY Oswego

**9:45 AM, Firefly: Mission to Study Lightning and Terrestrial Gamma Ray
Flashes**

David Knapick, Siena College

9:00 AM – 9:45 AM: SESSION IB. EDUCATIONAL PHYSICS (ROOM 170)

SESSION CHAIR: PROF. MOHAMMED TAHAR, SUNY BROCKPORT

9:00 AM, Studying Collisions Using Tracker

Robert Gaffney, SUNY Brockport

9:15 AM, On the Relativistic Projectile Motion: Angle of Projection when Range and Vertical Height are Equal

Grant Andrews and Thomas Giffune, SUNY Potsdam

9:30 AM, Investigating the Spectral Composition of String Instruments

Thomas M. Dunn, Siena College

9:00 AM – 10:00 AM: SESSION IC. QUANTUM OPTICS (ROOM 175)

SESSION CHAIR: PROF. MICHAEL VINEYARD, UNION COLLEGE

9:00 AM, Fourier transform and Uncertainty Principle for a particle in an infinite square well

Jai Kwan Bae, University of Rochester

9:15 AM, Discriminatory Polarization Forces on Chiral Molecules

Brian Regan, Colgate University

9:30 AM, Analog Electronic Laser Stabilization to an Atomic Reference

Ananya Sitaram, Marek Haruza, Maitreyi Jayaseelan, Nicholas P. Bigelow, University of Rochester

9:45 AM, Light Pulse Control of Quantum Information in Bose-Einstein Condensates

Steven B. Torrisi, Justin T. Schultz, Azure Hansen, Joseph D. Murphree, Nicholas P. Bigelow, University of Rochester

10:00 AM – 10:45 AM: SESSION II. POSTER SESSION (NUCLEUS)

Investigations of New Laboratory Measurements of Oxygen Desorption in Astrochemical Models

Alexander Arduini, Deep Shah, Sherwin Shaju, George Hassel, Siena College

Spectral Analysis of French Horn and Trumpet Mouthpieces

Josh Bivens, SUNY Oswego

Temperature Dependence of the Saturation Magnetization in Ferromagnetic Metallic Glasses

Andrew Bordash and Jacob Mills, SUNY Oswego

Thin Film Solar Cells: Enhancing Efficiency using Various Nanoparticles

Martin Dann, Carolina C. Ilie, SUNY Oswego

Physics in video games: Using numerical methods to simulate Newtonian physics

Timothy Dougherty, SUNY Oswego

Coincidence Efficiency of Sodium Iodide Detectors for Positron Annihilation

Thomas Eckert, Laurel Vincett, and Mark Yuly, Houghton College, SUNY Geneseo, Laboratory for Laser Energetics

Study of P-N Junctions and Metal-to-Metal Interfaces

Jeffrey Ellison, SUNY Brockport

Design and Fabrication of a Small Single-Axis Acoustic Levitator

Grant Farrokh, Le Moyne College

Performing Fowler Sampling and Removing Cosmic Ray Hits to Reduce Noise Numerically from Long-Infrared Detector Images

Chelsea Jean, Craig McMurtry, Meghan Dorn, Judy Pipher, University of Rochester

Capillary Condensation Transitions and Meniscus: Parallel Planes, Nanotubes, and Wedges

Dylan J. McIntyre, Nicholas C. Jira, M. T. Romano, J. R. D'Rozario, M. Guedes-Duarte, T. Dougherty, and C.C. Ilie, SUNY Oswego

Evolution of the Composition of Dust in Protoplanetary Disks

Ingrid Koch, K.H. Kim, S.P. Fogerty, W.J. Forrest, Dan M. Watson, University of Rochester

Design and Construction of a Cost-effective Atomic Force Microscope

Heidi Kroening, Jonathon Yuly, and Brandon Hoffman, Houghton College

Capillary Condensation Transitions and Meniscus: Parallel Planes, Nanotubes, and Wedge

Dylan J. McIntyre, Nicholas C. Jira, M. T. Romano, J. R. D'Rozario, M. Guedes-Duarte, T. Dougherty, and C.C. Ilie, SUNY Oswego

The Brain as a Universe: Misconceptions and Limitation in Brain Theories

Marie Romano, SUNY Oswego

Modeling of Carbon Chain Anion Species of The Low-mass Protostellar Region L1527

Deep Shah, Georgs Hassel, Sherwin Shaj, & Alexander Arduini, CURCA

Simulation of Deuterated Species of the Low-mass Protostellar Region L1527

Sherwin Shaju, George Hassel, Alexander Arduini, Deep Shah, Siena College

Quantifying Forces on Strongly Absorbing Materials Rotating in Optical Traps

Ryan Kropas and Emily Sobel, SUNY New Paltz

Modes and Q Factors of the Top Plate of Guitars

Ivory Stokes, University of Rochester

Dust Mineralogy Survey for T-Tauri Stars in Taurus-Auriga and Ophiuchus Region

Fan Wu, William Forrest, Shane Fogerty, University of Rochester

SEM-EDX Analysis of Aerosol Samples

Xuanhan Zhao, Union College

10:45 AM – 11:45 AM: SESSION IIIA. ASTRONOMY II (ROOM 122)

SESSION CHAIR: PROF. ERIC MONIER, SUNY BROCKPORT

10:45 AM, Quasar Emission Line Variability From Hubble Space Telescope Archive Data

Kasey Hogan, SUNY Brockport

11:00 AM, Characterizing the variability of 4-10 Myr old T-Tauri stars in the Orion OB1 Association

Md Tanveer Karim, University of Rochester

11:15 AM, C IV Absorbers in the Sloan Digital Sky Survey

Stephanie Robillard, SUNY Brockport

11:30 AM, Characterizing the Outflow Energetics of the 'Cloverleaf' Quasar Using Broad Absorption Lines

Daniel P. Burdette, SUNY Brockport

10:45 AM – 12:00 PM: SESSION IIIB. INSTRUMENTATION/EXPERIMENTAL TECHNIQUES I (ROOM 170)

SESSION CHAIR: MAJ. ANTHONY CLARK, UNITED STATES MILITARY ACADEMY

10:45 AM, Neutron Transport Analysis of Small Module Reactors to Support U.S. Army Energy Requirements at Forward Deployed Locations

CDT Joseph L. Brown and CDT Zachary D. Lewis, United States Military Academy

11:00 AM, Establishing a Laser Induced Breakdown Spectroscopy System for Post-Detonation Nuclear Forensics Applications

CDT Jordan A. Blanchard, CDT Eddie T. Ortega, and CDT Taylor M. Richard, United States Military Academy

11:15 AM, Noise Analysis in Terahertz Spectroscopy

James Buttner, Colgate University

11:30 AM, High-Throughput Electric Field Induced Second Harmonic Generation in Highly-Monodisperse Microdroplets

Julian Girard, ENS Cachan, University of Michigan

11:45 AM, Portable, Directional Neutron Detector

CDT Cory Fish, CDT Brad Bachand, MAJ Tony Clark, MAJ Will Koch, United States Military Academy at West Point

10:45 AM – 11:45 AM: SESSION IIIC. NUCLEAR AND PARTICLE PHYSICS (ROOM 175)

SESSION CHAIR: PROF. MARK YULY, HOUGHTON COLLEGE

10:45 AM, Measuring Parity Violation in Cobalt-60 Decay

Paul Lashomb and Mark Yuly, Houghton College

11:00 AM, A table top demonstration of general relativity using the Mössbauer effect

Emily Morrow, August Gula, and Mark Yuly, Houghton College

11:15 AM, Materials Testing Using Non-Radiating Techniques

CDT Trent Jones, United States Military Academy

11:30 AM, Recovering from Saturation

Jun Yin, University of Rochester

12:00 PM – 1:00 PM: SESSION IV. LUNCH (MARANO CAMPUS CENTER)

1:00 PM – 2:00 PM: SESSION V. “*VARIABLE STARS AND THE EXTRA-GALACTIC DISTANCE SCALE*”, PROF. SHASHI KANBUR, SUNY OSWEGO (ROOM 175)

2:00 PM – 3:30 PM: SESSION VIA. CONDENSED MATTER AND BIOLOGICAL PHYSICS (ROOM 170)

SESSION CHAIR: PROF. MATTHEW BELLIS, SIENA COLLEGE

2:00 PM, 3D Printed Prosthetics

Joseph Fairley, Siena College & InMoov

2:15 PM, Projected Thoughts: Liquid-Crystal-Display (LCD) to Cathode Ray Tube (CRT) to Projected Matrix

Annmarie Pryor and Theresa Vaughan, Siena College and Wadsworth Center

2:30 PM, Analysis of Annealed Indium Films

Kathryn Coghlan, SUNY Brockport

2:45 PM, Growth and Oxidation of Indium Thin Films

Amanda Landcastle, SUNY Brockport

3:00 PM, Synchronization of Josephson Junction Neurons

Matt LeGro, Colgate University

3:15 PM, Microhardness and Atomic Disorder of the *Balanus Amphitrite* Exoskeleton

Charles Hamilton, Colgate University

2:00 PM – 3:15 PM: SESSION VIB. INSTRUMENTATION/EXPERIMENTAL TECHNIQUES II (ROOM 175)

SESSION CHAIR: PROF. BRANDON HOFFMAN, HOUGHTON COLLEGE

2:00 PM, The Design and Construction of an X-ray Diffractometer for the Study of Thin Metal Films

Jordan Cady and Brandon Hoffman, Houghton College

2:15 PM, Design and Construction of a Laser Interferometer to Study Thin Metal Films

Sean Daigler and Brandon Hoffman, Houghton College

2:30 PM, The Construction of a Deposition Chamber for the in-situ Study of Thin Metal Films

Kyle Flemington and Brandon Hoffman, Houghton College

2:45 PM, A Study of Weak Magnetic Focusing

Sylvia Morrow and Mark Yuly, Houghton College

**3:00 PM, Measurement of the Primary D-T and D-D Ion Temperature Using
Neutron Time of Flight Spectra in Inertial Confinement Fusion Experiments**
Shuchen Wu, University of Rochester